BRISTOL BAY
SUBAREA CONTINGENCY PLAN

HAZMAT
SECTION

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HAZMAT: PART ONE - HAZMAT RESPONSE

A. INITIAL NOTIFICATION OF RESPONSE AGENCIES

All hazardous material releases in excess of the reportable quantity (RQ) must be reported by the responsible party to the National Response Center. Any release regardless of the amount is required to be reported to the State of Alaska, Department of Environmental Conservation (ADEC).

Upon notification of a release, the NRC shall promptly notify the appropriate FOSC. The FOSC shall contact the ADEC. If the state receives notification first, the state shall notify the FOSC promptly. An emergency notification list is provided at the front of the Response Section to this plan. The FOSC and the SOSC (ADEC) will relay the notification to local communities, resource agencies, medical facilities, and others as necessary.

B. RECOGNITION

The recognition of chemical or physical hazards is essential to dealing with a release safely. Chemical and physical hazards may be confronted by emergency response personnel when responding to a hazardous material incident. Chemical hazards include biological, radioactive, toxic, flammable, and reactive hazards. Physical hazards include slips, trips and falls, compressed gases, materials handling, thermal, electrical and noise hazards, and confined spaces.

Once a hazardous material has been identified it is important to determine the hazards and properties. Thousands of substances exhibit one or more characteristics of flammability, radioactivity, corrosiveness, toxicity, or other properties which classify them as hazardous. For any particular hazardous category, the degree of hazard varies depending on the substance. The degree of hazard is a relative measure of how hazardous a substance is. For example, the Immediately Dangerous to Life and Health (IDLH) concentration of butyl acetate in air is 10,000 parts per million (ppm); the IDLH for tetrachloroethane is 150 ppm. Tetrachloroethane is therefore far more toxic (has a higher degree of hazard) when inhaled in low concentration than butyl acetate. Vapors from butyl acetate, however, have a higher degree of explosive hazard than tetrachloroethane vapors which are not explosive.

Once the substance(s) has been identified, the hazardous properties and degree of hazard can be determined using reference materials. Chemical properties and the health hazards associated with the various materials transported in the Bristol Bay subarea can be found in the USCG CHRIS Manual, the DOT Hazardous Materials Guide, and CAMEO (Computer-Aided Management of Emergency Operations) computer programs. Industry experts can be consulted as well. An excellent resource is the CHEMTREC 24-hour information number, 800-424-9300, supported by the Chemical Manufacturers Association. Additional references are provided below. Although appropriate references give information about a substance's environmental behavior, additional field data will likely be required. Most frequently, air monitoring and sampling are needed to verify and identify the presence of hazardous materials, to calculate concentrations, and to confirm dispersion patterns.

Available References:

- The Unified Plan which addresses the Unified Command Structure in Annex B, Appendix II.
- Commandant Instruction #16465.30
- National Contingency Plan (40 CFR part 300)
- Coastal Sensitivity Atlas
- USCG CHRIS Manual
- DOT Emergency Response Guidebook
- CHEMTREC, Chemical/Hazardous Substance information, 800-424-9300
- SAX - Dangerous Properties of Hazardous Materials
- IMDC Codes
- NFPA Fire Protection Guide On Hazardous Materials
- NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Also, the NIOSH/OSHA Pocket Guide Book
- TOMES (available thru ADEC)
- Easton Environmental, 1994. Hazards Analyses (Task 2). Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- Easton Environmental, 1994. Response Capability Assessments (Task 3). Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- Easton Environmental, 1994. State and Regional Hazard Profiles, (Task 5). Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- Easton Environmental, 1995. Alaska's Level A/B HAZMAT Response Resources. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, Inc., 1999. 1998 Statewide Hazardous Material Inventory. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- HartCrowser, Inc., 1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.
- Oil and Chemical Response Reference Library at the Marine Safety Office in Anchorage. This library consists of a Macintosh Computer System with CAMEO, plus all of the publications listed above. A complete library listing is maintained and updated as new/revised publications/programs are received. Many of the above publications/programs can also be found at ADEC offices and with the local fire departments.

C. EVALUATION

To properly evaluate a hazardous materials release, the incident must be characterized. Incident characterization is the process of positively identifying the substance(s) involved and evaluating the actual or potential public health and environmental impacts. Characterizing a hazardous substance incident is generally a two-phase process, an initial characterization followed by a more comprehensive characterization.

1. Initial Characterization: The initial characterization is based on information that is readily available or can be obtained fairly rapidly to determine what hazards exist and if immediate protective measures are necessary. During this initial phase, a number of key decisions must be made regarding

- Imminent or potential threat to public health.
- Imminent or potential threat to the environment.
- Immediate need for protective actions to prevent or reduce the impact.
- Protection of the health and safety of response personnel.

If the incident is not immediately dangerous to human life or sensitive environments, more time is available to evaluate the hazards, to design plans for cleanup, and to establish safety requirements for response personnel. Information for characterizing the hazards can be obtained from on-scene intelligence (records, placards, eye witnesses, etc.), direct-reading of instruments, and sampling. Depending on the nature of the incident and the amount of time available, various combinations of these information gathering process are used. The following outline describes an approach to collecting data needed to evaluate the impact of a hazardous materials incident.

♦ An attempt should be made to gather as much information as possible, such as:

- Description and exact location of the incident.
- Date and time of occurrence.
- Hazmats involved and their physical/chemical properties.
- Present status of incident.
- Potential pathways of dispersion.
- Habitation - population at risk.
- Environmentally sensitive areas - endangered species, delicate ecosystems.
- Economically sensitive areas - industrial, agricultural.
- Accessibility by air, roads and waterways.
- Current weather and forecast (next 24 to 48 hours).
- Aerial photographs/video when possible.
- A general layout and mapping of the site.
- Available communications.

♦ Off-site reconnaissance (that can be conducted in Level D) should be the primary inspection for initial site characterization when the hazards are largely unknown or there is no urgent need to go on-site. Off-site reconnaissance consists of visual observations and monitoring for atmospheric hazards near the site. Collecting of off-site samples may identify substance migration or indicate on-site conditions.

Off-site reconnaissance would include:

- Monitoring ambient air with direct-reading instruments for:
  - Organic and inorganic vapors, gases, and particulates
  - Oxygen deficiency
  - Specific materials, if known
  - Combustible gases and radiation
- Identifying placards, labels, or markings on containers or vehicles.
- Noting the configuration of containers, tank cars, and trailers.
- Noting the types and numbers of containers, tank cars, trailers, buildings, and impoundments.
- Identifying any leachate or runoff.
- Looking for biological indicators - dead vegetation, animals, insects or fish.
- Noting any unusual odors or conditions.
- Observing any vapors, clouds, or suspicious substances.
- Taking off-site samples of air, surface water, ground water (wells), drinking water, site runoff, and soil.
- Reviewing the Dangerous Cargo Manifest.
- Conducting interviews with workers, witnesses, observers, or inhabitants.

♦ An on-site survey (conducted in a minimum of Level B protection until hazards can be determined) may be necessary if a more thorough evaluation of hazards is required. On-site surveys require personnel to enter the restricted or hot zone of the site. Prior to any personnel conducting an on-site survey, an entry plan addressing what will be initially accomplished and prescribing the procedures to protect the health and safety of response personnel will be developed. On-site inspection and information gathering would include:

- Monitoring ambient air with direct-reading instruments for:
  - Organic and inorganic vapors, gases, and particulates
  - Oxygen deficiency
  - Specific materials, if known
  - Combustible gases and Radiation
- Observing containers, impoundments, or other storage systems and noting:
  - Numbers, types, and quantities of materials.
  - Condition of storage systems (state of repair, deterioration, etc.)
  - Container configuration or shape of tank cars, trailers, etc.
  - Labels, marking, identification tags, or other indicators of material
  - Leaks or discharges from containers, tanks, ponds, vehicles, etc.
- Noting physical condition of material:
  - Solids, liquids, gases
  - Color
  - Behavior (foaming, vaporizing, corroding, etc.)
- Determining potential pathways of dispersion - air, surface water, ground water, land surface, biological routes
- Taking on-site samples of storage containers, air, surface water, ground water (wells), drinking water, site runoff, and soil.

2. Comprehensive Characterization: Comprehensive characterization is the second phase, a phase which may not be needed in all responses. It is a more methodical investigation to enhance, refine, and enlarge the information base obtained during the initial characterization. This phase provides more complete information for characterizing the hazards associated with an incident. As a continuously operating program, the second phase also reflects environmental changes resulting from any response activities.

Information obtained off-site and during the initial site entries can be sufficient to thoroughly identify and assess the human and environmental effects of an incident. But if it is not, an environmental surveillance program needs to be implemented. Most of the same type of information collected during the preliminary inspection is needed, but more detailed and extensive. Instead of one or two ground water samples being collected, for instance, a broad and intensive ground water survey may be needed over a long period of time.

Results from preliminary inspections provide a screening mechanism for a more complete environmental surveillance program to determine the full extent of contamination. Since mitigation and remedial measures may cause changes in the original conditions, a continual surveillance program can be used to identify and track fluctuations or ramifications.

D. EVACUATION

Neither the EPA nor the Coast Guard has the authority to order an evacuation of facilities and communities in the event of a release; this authority lies with local or state entities. However, evacuation should be strongly recommended to local civil authorities (police, fire departments, etc.) whenever a hazardous release poses a threat to surrounding personnel. With a release of hazardous materials, the area should be isolated for a least 100 yards in all directions until the material is identified. Only trained and properly equipped personnel should be allowed access.

Quick evacuation tables are located in the back of the DOT Emergency Response Guidebook. Evacuation should always begin with people in downwind and in low-lying areas. Continual reassessment is necessary to account for changes in weather wind, rate of release, etc. CAMEO should be used to provide an air plume trajectory model for downwind toxic plume distances. Again, constant reassessment will be required.

Issues concerning disaster assistance should be referred to DMVA/DES.

E. DIRECTION AND SITE/ENTRY CONTROL

The purpose of site control is to minimize potential contamination of emergency response personnel, protect the public from any hazards, and prevent unlawful entry onto the site which may result in an additional release of material, destruction of evidence, or prolong the cleanup effort. The degree of site control necessary depends on site characteristics, site size, and the surrounding community.

Several site control procedures should be implemented to reduce potential exposure and ensure an effective, rapid cleanup is conducted:

Secure site, and establish entry control points.
Compile a site map.
Prepare the site for subsequent activities.
Establish work zones.
Use the buddy system when entering.
Establish and strictly enforce decontamination procedures.
Establish site security measures.
Set up communications networks.
Enforce safe work practices.

For a complete guidance on Direction and Site Entry/Control, refer to the NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (Publication No. 85-115).

F. COMMAND AND CONTROL

Government response and organization in the State of Alaska are based on a Unified Command structure of the Incident Command System (ICS). The Unified Command brings together the FOSC, the SOSC, and the Responsible Party's Incident Commander (along with the LOSC if an immediate threat still exists to the health and safety of the local populace) into one governing unit. The ICS with a Unified Command is discussed in detail in the **Unified Plan, Annex B**.

G. COMMUNICATIONS

A communications plan for all sections of the ICS will be established by the Incident Commander.

At this time, a pre-established generic communications plan accounting for the various police, fire, federal, state, and local frequencies has not been established. Federal and State communications resources are listed in **the Unified Plan, Annex E, Appendix V** and in the Resources Section of this Plan.

H. WARNING SYSTEMS & EMERGENCY PUBLIC NOTIFICATION

For FOSC/SOSC access to emergency broadcast systems refer to the **Unified Plan, Annex E, Appendix III, Tab V.** For a listing of radio, newspaper, and television contacts refer to the Resources Section of this Plan.

Public Information/Community Relations guidelines and information are provided in the **Unified Plan, Annex I.**

I. HEALTH AND MEDICAL SERVICES

For hospital and clinic information refer to the Resources Section of this Plan

HAZMAT: PART TWO - RESPONSIBLE PARTY HAZMAT ACTION

A. DISCOVERY AND NOTIFICATION

Any person in charge of a vessel or a facility shall report releases of hazardous materials in excess of the reportable quantity (RQ) as defined in Table 1 of 49 CFR 172.101 to the National Response Center (NRC) (800-424-8802) in accordance with the National Contingency Plan. Any release regardless of the amount is required to be reported to the State of Alaska. Notification of the State can be done by contacting the Department of Environmental Conservation, either at the local office or through the 24-hour telephone number, 800-478-9300.

If direct reporting to the NRC is not immediately practicable, reports will be made to the Captain of the Port Western Alaska (the USCG FOSC for the Bristol Bay subarea), (907-271-6700). The Environmental Protection Agency's predesignated FOSC may also be contacted through the regional 24-hour response telephone number (206-553-1263). All such reports shall be promptly relayed to the NRC.

In any event, ***the person in charge of the vessel or facility involved in a hazardous material release shall notify the NRC and the State of Alaska as soon as possible.***

As much information as possible shall be reported. This will include, but is not limited to, the following:

- Location of the release
- Type(s) of material(s) released
- An estimate of the quantity of material released
- Possible source of the release
- Date and time of the release.

B. REMOVAL ACTION

The responsible party shall, to the fullest extent possible, perform promptly the necessary removal action to the satisfaction of the predesignated FOSC and SOSC.

Regardless of whether or not a cleanup will be conducted, the responsible party shall cooperate fully with all federal, state, and local agencies to ensure that the incident is handled in a safe, proper manner.

HAZMAT: PART THREE - STATE HAZMAT ACTION

A. AUTHORITY

The Alaska Department of Environmental Conservation is mandated by statute to respond promptly to a discharge of oil or a hazardous substance (AS 46.80.130). Additionally, the ADEC may contract with a person or municipality in order to meet response requirements, or establish and maintain a containment and cleanup capability (i.e., personnel, equipment and supplies) (AS 46.09.040).

B. RESPONSE POLICY

The ADEC is currently operating in accordance with an August 1992 policy decision which precludes ADEC personnel from responding to situations which require Level A/B protection. A reduction in FY 93 funding resulting in corresponding decreases in the level of equipage, training, and overall readiness. ADEC personnel are prohibited from responding with or using personal protective equipment beyond the Level C protection category (as defined in EPA standards).

For additional information regarding the State's general response policy, refer to the **Unified Plan, Annex A, Appendix VI, Tab C.**

C. STATE RESPONSE CAPABILITIES

The ADEC has entered into local response agreements with the Fairbanks North Star Borough (FNSB) and the Municipality of Anchorage (MOA). In the event of a Hazmat release requiring immediate response, the ADEC pre-designated SOSC may request support from the FNSB and MOA Hazmat Response Teams. Both teams maintain a Level A entry capability and can respond beyond their jurisdictional boundaries at the request of the SOSC. The teams are to be used strictly for emergency response operations. Once the immediate hazard is dealt with, the teams will be released to return back to their home station. Post-response recovery operations will be handled by the responsible party (if known) or through ADEC response term contractors.

ADEC currently maintains several term contracts for hazmat assessment, contaminated sites and hazmat/unknowns response, and oil spill response. These term contractors are listed in the **Unified Plan (Annex E, Appendix III, Tab X)**. Several of these term contractors possess a limited hazmat response capability.

D. RESPONSIBILITIES

State agency roles and responsibilities are clearly defined in the **Unified Plan, Annex A**. During a hazmat incident, the State On-Scene Coordinator's anticipated and prioritized response objectives are as indicated below:

- Safety: Ensure the safety of persons involved, responding or exposed from the immediate effects of the incident.

- Public Health: Ensure protection of public health and welfare from the direct or indirect effects of contamination on drinking water, air and food.

- Source Mitigation: Ensure actions are taken to stop or reduce the release at the source to reduce/eliminate further danger to public health and the environment.

    - Environment: Ensure protection of the environment, natural and cultural resources, and biota from the direct or indirect effects of contamination.

    - Cleanup: Ensure adequate containment, control, cleanup and disposal by the responsible party or take over when cleanup is inadequate.

    - Restoration: Ensure assessment of contamination and damage and restoration of property, natural resources and the environment.

    - Cost Recovery: Ensure recovery of costs and penalties to the Oil and Hazardous Substance Release Fund for response containment, removal, remedial actions, or damage.

HAZMAT: PART FOUR - FEDERAL HAZMAT ACTION

A. AUTHORITY

Section 311 of the Federal Water Pollution Control Act (FWPCA), and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 are the principal authorities for federal response to discharges of oil and releases of hazardous substances. The procedures and standards for conducting responses are contained in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300). Under the NCP and the Unified Plan, each Coast Guard COTP for coastal zones, or EPA representatives for inland zones, coordinates federal activities on-scene as either the predesignated FOSC or as the first federal official in the absence of the predesignated FOSC. The FOSC objective is to ensure rapid, efficient mitigation of actual or threatened pollution releases or discharges.

B. JURISDICTION

The NCP identifies the Coast Guard COTP for Western Alaska (Commanding Officer, MSO Anchorage) as the predesignated federal OSC (FOSC) for the coastal zone. The FOSC will respond to hazardous substance releases, or threats of release, occurring in the coastal zone and not involving DOD vessels or DOD facilities, that originate from:

- Vessels
- Facilities, other than hazardous waste management facilities, when the release requires immediate action to prevent risk of harm to human life, health, or the environment.
- Hazardous waste management facilities, or illegal disposal areas, when the FOSC determines emergency containment or other immediate removal actions are necessary prior to the arrival of the EPA OSC.

For all shoreside incidents in the coastal zone, once the immediate threat to human life, health, or the environment has been abated and the character of the response changes to a long-term cleanup or site remediation, the FOSC responsibilities will be transferred from the USCG COTP to a designated EPA official.

Note: The Local On-Scene Coordinator (LOSC) would be the person in charge as long as there is an immediate threat to public health or safety. The LOSC may defer to the FOSC or SOSC (per the Unified Plan, Annex B).

C. RESPONSE POLICY

The USCG will follow the policy guidance contained in COMDTINST M16465.30, "Policy Guidance for Response to Hazardous Chemical Releases", and the Marine Safety Manual, Volume VI, Chapter 7 when responding to a hazardous chemical release.

The USCG and other federal agencies in Alaska, will maintain a "conservative" Level D response

capability level. "Conservative" response consists of recommending evacuating the affected area and maintaining a safe perimeter while attempting to positively identify the pollutant and outlining a clear course of action. Federal personnel, with the exception of specialized teams (e.g., the National Strike Force and the Pacific Strike Team), will not enter a hazardous environment. This response posture is appropriate due to insufficient numbers of trained or equipped personnel to allow a safe and proper entry into a hazardous environment, and the low risk of a chemical release in the area. Refer to the Unified Plan for a description of the National Strike Force and other special forces.

Level D protection is primarily a work uniform/coveralls, safety boots, safety goggles and a hard hat. It provides minimal protection. Level D must not be worn for "entry" into any hazardous materials situation. It does not provide ANY protection from chemicals. Level D strictly applies to non-hazardous environments (i.e., Command Post, Cold Zone, etc.).

In situations requiring an entry into a hazardous environment, federal agencies will rely on the capabilities of the USCG Pacific Strike Team, EPA Emergency Response Teams (ERTs), state and local hazmat response teams if available, and industry/ commercial resources.

In implementing this conservative response posture, the COTP Western Alaska or the designated EPA FOSC will carry out all the FOSC functions not requiring entry of unit personnel into a hazardous environment. These functions include:

- Conducting preliminary assessment of the incident.
- Carrying out COTP measures such as restricting access to affected areas, controlling marine traffic (safety zones), notifying affected agencies, coordinating with state and local agencies, and assisting as resources permit.
- Conducting local contingency planning.
- Identifying responsible parties, and informing them of their liability for removal costs.
- Carrying out "first aid" mitigation if the situation warrants and capability exists.
- Monitoring cleanup activities.

The CAMEO (Computer-Aided Management of Emergency Operations) computer programs will be an important part of any chemical release incident. The CAMEO chemical database with Codebreaker and Response Information Data Sheets modules provide a rapid means of identifying chemicals and their associated hazards. The ALOHA air modeling program, part of CAMEO, provides a rapid means of developing a downwind hazard evaluation. MSO Anchorage Port Operations Department personnel and/or the NOAA SSC will be responsible for operating the CAMEO programs during a hazardous chemical release for the FOSC. ADEC also maintains CAMEO to assist in their response effort. Programs for the ALOHA model need to be frequently updated to account for changing wind and weather conditions, source strength, and other changing conditions.

HAZMAT: PART FIVE - SUBAREA HAZMAT RISK ASSESSMENT

A. GENERAL

The Bristol Bay Subarea includes the Bristol Bay region and adjacent inland areas of western southcentral Alaska. The area is characterized by predominantly isolated coastal communities with some communities on interior rivers. Industrial activity is limited primarily to seafood processing.

1. Chemical Inventory: Refer to Tables C-1 and C-2 for chemical locations and quantities. Extremely hazardous substances reported or otherwise identified in significant quantities at facilities in the region are:

- anhydrous ammonia,
- chlorine, and
- sulfuric acid.

With a large number of seafood processing facilities, anhydrous ammonia is present in the greatest quantities, followed by (in order of total amount) chlorine and sulfuric acid. Anhydrous ammonia is not only present in the greatest amounts in the subarea, it is also found at more facilities than any other substance. Chlorine is the next most widespread. Sulfuric acid was identified at two facilities.

Extremely hazardous substances are transported into the subarea from southern ports by water and delivered either direct to facilities, or transported to facilities by truck over local road systems. While most substances are shipped via commercial freight carriers, a substantial amount is shipped aboard fishing industry vessels.

2. Chemical Risks: Of the three extremely hazardous substances known to be present in substantial quantities, the two compressed gases pose the greatest threat to communities: anhydrous ammonia and chlorine. Of these, ammonia poses the greatest threat. The total of the populations within vulnerable zones of ammonia facilities -- termed the "hazard factor" numbers 2,800. By comparison, the hazard factor for chlorine facilities is 1,500.

3. Response Capability: Other than the ability of some facilities to deal with operational leaks and to protect worker safety, there is no defensive or offensive response capability in the subarea. There are only a few local emergency response plans in effect at this time
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[1]Table C-1: Extremely Hazardous Substances in the Bristol Bay Subarea			
Location	**Facility**	**Substance**	**Maximum Qty (pounds)**
Chignik	Chignik Pride	Anhydrous Ammonia	8,000 lbs
Chignik	Norquest Seafoods	Anhydrous Ammonia	12,000 lbs
Dillingham	Dragnet Fisheries	Anhydrous Ammonia	5,400 lbs
Dillingham	Wards Cove Packing Company	Anhydrous Ammonia Sulfuric Acid	55,550 lbs 5,550 lbs
Dillingham	Peter Pan Seafoods	Anhydrous Ammonia Chlorine	2,150 lbs 1,700 lbs
Egegik	ISA Big Creek Facility Plant 4	Anhydrous Ammonia	150 lbs
Egegik	ISA Fish Camp	Anhydrous Ammonia	150 lbs
Egegik	Woodbine Alaska Fish Co.	Chlorine	500 lbs
Ekuk	Wards Cove Packing Company	Anhydrous Ammonia Sulfuric Acid	26,500 lbs 1,000 lbs
Naknek	Nelbro Packing (AK General Seafoods)	Anhydrous Ammonia Chlorine	8,000 lbs 1,000 lbs
Naknek	Inlet Fisheries	Anhydrous Ammonia	600 lbs
Naknek	King Crab (Ocean Beauty)	Anhydrous Ammonia	9,000 lbs
Naknek	Pederson Point-North Pacific Processors	Anhydrous Ammonia Chlorine	8,000 lbs 200 lbs
Naknek	Red Salmon Cannery	Anhydrous Ammonia	17,000 lbs
Naknek	Wards Cove Packing Company	Anhydrous Ammonia	55,550 lbs
South Naknek	Wards Cove Packing Company	Anhydrous Ammonia	5,550 lbs

[1] Sources: Data was extracted from the Evaluation of Chemical Threats to Alaska (September 2000) and 1998 Statewide Hazardous Material Inventory reports prepared by HartCrowser Inc., for the Alaska Department of Environmental Conservation. Data is based on annual Tier Two reports submitted by facilities to the Local Emergency Planning Committee. The table also includes data from the Final Report (1994), Bristol Bay Local Emergency Planning District Steering Committee Hazard Analysis Workbook, prepared by Sheinberg Associates.

[2]Figures provided in both pounds and gallons, based on report data. Figures are rounded to the nearest hundred.

[1]Table C-2: Inventory of Reported Petroleum Products in the Bristol Bay Subarea			
Location	**Facility (non-residential)**	**Substance**	**[2]Maximum Qty (lbs/gals)**
Brooks Camp	Five Mile Containment Pit	Diesel (stored in fuel bladders)	60,000 gal
Brooks Camp and Lake	Katmai National Park and Preserve	Diesel #1 Gasoline	21,000 gal 4,500 gal
Chignik Bay	Norquest Seafoods	Diesel Propane	185,000 gal 6,000 lb
Chignik Bay	City of Chignik	Diesel Heating Fuel	43,000 gal
Chignik Bay	Chignik Bay Village Council	Diesel Heating Fuel	5,000 gal
Chignik Bay	Chignik Pride	Diesel Heating Fuel Propane	80,000 gal 3,000 lb
Chignik Bay	Lake and Peninsula School District	Diesel Heating Fuel	5,400 gal
Chignik Lagoon	Lake and Peninsula School District	Diesel Heating Fuel	30,000 gal
Chignik Lagoon	Native Village of Chignik Lagoon	Diesel Heating Fuel	75,000 gal
Chignik Lagoon	Native Village of Chignik Lagoon	Diesel Heating Fuel	1,500 gal
Chignik Lagoon	Native Village of Chignik Lagoon	Diesel Heating Fuel	2,000 gal
Chignik Lagoon	ATT/Alascom	Diesel Heating Fuel	2,500 gal
Chignik Lake	Chignik Lake Village Council	Diesel Heating Fuel	17,100 gal
Chignik Lake	Lake and Peninsula School District	Diesel Heating Fuel	20,200 gal
Chignik Lake	Tide Mark Co.	Diesel Heating Fuel	14,500 gal
Chignik Lake	Tide Mark Co.	Diesel Heating Fuel	2,000 gal
Dillingham	US DOT FAA Station	Diesel Fuel	7,400 lbs
Dillingham	US DOT FAA Station	Gasoline	1,850 lbs
Dillingham	Delta Western (Bulk Fuel Facility)	AvGas Diesel #1 Diesel #2 Unleaded Gasoline	284,500 gal 487,900 gal 1,043,700 gal 399, 900 gal
Dillingham	Nushagak Electric Cooperative	Diesel #2	1,100,000 gal
Dillingham	Moody's Oil	Propane	37,600 gal
Egegik	Egegik Fuel Company	Diesel Heating Fuel	44,400 gal
Egegik	Lake and Peninsula School District	Diesel Heating Fuel	2,000 gal
Egegik	Woodbine Alaska Fish Co.	Diesel Heating Fuel	98,000 gal
Egegik	City of Egegik	Diesel Heating Fuel	68,000 gal
Egegik	Nelbro Packing Company	Diesel Heating Fuel	52,000 gal
Egegik	Egegik Trading Company	Diesel Heating Fuel	2,000 gal
Ekuk	Ward's Cove Packing	Diesel #1 Diesel #2 Propane Unleaded Gasoline	20,000 gal 145,000 gal 9,000 lb 25,000 gal
Igiugig	Igiugig Village	Diesel Heating Fuel	60,400 gal
Igiugig	Igiugig Village	Diesel Heating Fuel	5,000 gal
Igiugig	Lake and Peninsula School District	Diesel Heating Fuel	6,000 gal
Iliamna	Yukon Fuel Company	Diesel Heating Fuel	86,000 gal
Iliamna	U.S. DOT FAA	Diesel Heating Fuel	3,000 gal
Iliamna	Iliamna Village Council	Diesel Heating Fuel	3,000 gal
Iliamna	Iliamna Baptist Church	Diesel Heating Fuel	2,500 gal
Iliamna	Royal AK Lodges	Diesel Heating Fuel	2,000 gal
Iliamna	Iliamna Lake Lodge	Diesel Heating Fuel	3,300 gal

Iliamna	Iliamna Trading General Store	Diesel Heating Fuel	11,855 gal
Iliamna	Iliamna Village Council Clinic	Diesel Heating Fuel	2,000 gal
Iliamna	Aero Maintenance Service	Aviation Fuel	2,500 gal
Iliamna	Telarik Creek Lodge	Diesel Heating Fuel	5,000 gal
Iliamna	Iliamna Airport Hotel	Diesel Heating Fuel	2,500 gal
Iliamna	Iliamna Air Taxi	Aviation Fuel	10,000 gal
Iliamna	Rainbow King Lodge	Diesel Heating Fuel	19,000 gal
Iliamna	U.S. Postal Service	Diesel Heating Fuel	2,000 gal
Iliamna	AK DOT Airport Shop	Diesel Fuel	5,000 gal
Iliamna	Roadhouse Inn B&B	Diesel Heating Fuel	2,000 gal
Ivanof Bay	Lake and Peninsula School District	Diesel Heating Fuel	20,000 gal
Ivanof Bay	Ivanof Bay Village Council	Diesel Heating Fuel	22,600 gal
King Salmon	US DOT FAA Station	Diesel Fuel	150,000 lbs
King Salmon	US DOT FAA Station	Gasoline	25,900 lbs
King Salmon	Katmai National Park and Preserve	Diesel #1	7,000 gal
Kokhanok	Lake and Peninsula School District	Diesel Heating Fuel	45,000 gal
Kokhanok	Kokhanok Village Council	Diesel Heating Fuel	22,000 gal
Kokhanok	Danny Ruehl's Gas Station	Gasoline	3,800 gal
Kokhanok	Kokhanok Dog Mushers Association	Gasoline	2,300 gal
Levelock	Levelock Village Council	Diesel Heating Fuel	124,900 gal
Levelock	Lake and Peninsula School District	Diesel Heating Fuel	12,000 gal
Levelock	Levelock Village Council	Diesel Heating Fuel	30,900 gal
Levelock	Levelock Village Council	Diesel Heating Fuel	1,000 gal
Naknek	Delta Western (Bulk Fuel Facility)	AvGas Diesel #1 Diesel #2 Jet A-50 Unleaded Gasoline	207,500 gal 500,430 gal 155,400 gal 139,900 gal 449,700 gal
Naknek	Naknek Electric Association	Diesel #2	1,550,000 gal
Newhalen	City of Newhalen	Diesel Heating Fuel	3,500 gal
Newhalen	Lake and Peninsula School District	Diesel Heating Fuel	5,000 gal
Newhalen	Iliamna/Newhalen/Nondalton Elec Coop.	Diesel Heating Fuel	191,700 gal
Nondalton	Lake and Peninsula School District	Diesel Heating Fuel	13,400 gal
Nondalton	City of Nondalton	Diesel Heating Fuel	32,000 gal
Nondalton	Jimmy Baluta Fuels	Diesel Heating Fuel	3,000 gal
Nondalton	City of Nondalton	Diesel Heating Fuel	1,000 gal
Nondalton	City Water Treatment Plant	Diesel Fuel	3,500 gal
Nondalton	Mission Statement Lodge	Diesel Heating Fuel	2,000 gal
Nondalton	Lake and Peninsula School Dist Housing	Diesel Heating Fuel	2,500 gal
Pedro Bay	Lake and Peninsula School District	Diesel Heating Fuel	20,000 gal
Pedro Bay	Pedro Bay Village Council	Diesel Heating Fuel	2,000 gal
Pedro Bay	Pedro Bay Village Council	Diesel Heating Fuel	3,500 gal
Pedro Bay	Pedro Bay Village Council	Diesel Heating Fuel	24,000 gal
Perryville	Lake and Peninsula School District	Diesel Heating Fuel	23,400 gal
Perryville	Native Village of Perryville	Diesel Heating Fuel	72,500 gal
Pilot Point	City of Pilot Point	Diesel Heating Fuel	18,400 gal
Pilot Point	City of Pilot Point	Diesel Heating Fuel	90,000 gal
Pilot Point	Lake and Peninsula School District	Diesel Heating Fuel	7,000 gal
Pilot Point	City of Pilot Point	Diesel Heating Fuel	20,500 gal
Port Alsworth	National Park Service	Diesel Heating Fuel	9,355 gal
Port Alsworth	National Park Service-Main Facility	Diesel Heating Fuel	11,600 gal
Port Alsworth	Lake Clark Air	Aviation Fuel	8,000 gal
Port Alsworth	Lake and Peninsula School District	Diesel Heating Fuel	15,000 gal
Port Alsworth	Alaska Wilderness Lodge	Diesel Heating Fuel	6,000 gal
Port Alsworth	Lake Clark Air Lodge - The Farm	Diesel Heating Fuel	6,000 gal
Port Alsworth	Fishing Unlimited	Diesel Heating Fuel	4,300 gal

Port Alsworth	Lake and Peninsula Air Service	Aviation Fuel	5,500 gal
Port Heiden	City of Port Heiden	Diesel Heating Fuel	35,000 gal
Port Heiden	City of Port Heiden	Diesel Heating Fuel	428,000 gal
Port Heiden	City of Port Heiden	Diesel Heating Fuel	4,500 gal
Port Heiden	Native Village of Port Heiden	Diesel Heating Fuel	55,000 gal
Port Heiden	Reeve Aleutian Airways	Diesel Heating Fuel	45,600 gal
Port Heiden	Lake and Peninsula School District	Diesel Heating Fuel	15,000 gal
Port Heiden	AK DOT Airport Shop	Diesel Heating Fuel	5,000 gal
Togiak	Togiak Fisheries	Propane	6,800 gal
Twin Hills	Twin Hills Village Council	Propane	2,300 gal

[1] Sources: Data was extracted from the Evaluation of Chemical Threats to the Alaska Public (September 2000) and 1998 Statewide Hazardous Material Inventory reports prepared by HartCrowser Inc., for the Alaska Department of Environmental Conservation. Data is based on annual Tier Two reports submitted by facilities to the Local Emergency Planning Committee. Data was also extracted from the Lake and Peninsula Borough listing provided to ADEC. The table also includes data from the Final Report (1994), Bristol Bay Local Emergency Planning District Steering Committee Hazard Analysis Workbook, prepared by Sheinberg Associates.

[2]Figures provided in both pounds and gallons, based on report data. Figures are rounded to the nearest hundred.

B. FACILITIES

This subsection presents the results of the hazards analysis for facilities that store or use extremely hazardous substances. Results are presented beginning with the hazards identification which includes the chemical and facility inventory. Detailed descriptions of the risk and vulnerability analyses for the Bristol Bay subarea may be found in the Easton Environmental Reports (Tasks 2, 3, and 5) and the Sheinberg Associates report cited in Part Three of this Hazmat Section.

1. Hazards Identification: The limited number of facilities (identified in Table C-1) with compressed gases was identified by reviewing annual report forms.

- CHEMICAL INVENTORY

Anhydrous ammonia is present in amounts greater than threshold planning quantities. Their properties and how they affect humans are discussed below.

Anhydrous ammonia is a colorless gas with a characteristic odor. The term "anhydrous" is used to distinguish the pure form of the compound from solutions of ammonia in water. Like chlorine, anhydrous ammonia is neither explosive nor flammable, but will support combustion. It readily dissolves in water to form an aqua ammonia solution. Anhydrous ammonia is considerably lighter than air and will rise in absolutely dry air. As a practical matter, however, anhydrous ammonia immediately reacts with any humidity in the air and will often behave as a heavier gas. The chemical reacts with and corrodes copper, zinc and many alloys.

Anhydrous ammonia affects the body in much the same way as chlorine gas. Like chlorine, anhydrous ammonia gas is primarily a respiratory toxicant. In sufficient concentrations, the gas affects the mucous membranes, the respiratory system and the skin. In high concentrations it can cause convulsive coughing, difficult and painful breathing, and death. Anhydrous ammonia will cause burns if it comes in contact with skin or eyes.

Chlorine gas and anhydrous ammonia are also present in amounts greater than threshold planning quantities. Their properties and how they affect humans are discussed below.

Chlorine is a greenish-yellow gas with a characteristic odor. It is neither explosive nor flammable, but is a strong oxidizing agent and will support combustion. It is only slightly soluble in water. At about two and one-half times the density of air, it will spread as a dense gas flowing downhill under the influence of gravity. The chemical has a strong affinity for many substances and will usually produce heat on reacting. While dry chlorine is non-corrosive at ordinary temperatures, it becomes extremely corrosive in the presence of moisture.

Chlorine gas is primarily a respiratory toxicant. In sufficient concentrations, the gas affects the mucous membranes, the respiratory system and the skin. In high concentrations it can permanently damage the lungs and can cause death by suffocation. Liquid chlorine will cause burns if it comes in contact with skin or eyes.

Sulfuric acid solution is also reported in amounts greater than threshold planning quantities. Its properties and how it affects humans are discussed below.

Sulfuric acid is a dense, colorless, oily liquid. It is highly reactive with a large number of other substances and is readily soluble in water with release of heat. Fumes are released from the liquid through evaporation, and heat as a result of fire or other chemical reaction can significantly increase emissions.

Both the liquid and its solutions will cause burns if allowed to come in contact with skin or eyes. Fumes are highly toxic, and reaction of the acid with a variety of substances can produce other toxic gases.

- **FACILITY INVENTORY See Table C - 1**

2. Risk and Vulnerability Assessments: For a complete summary of the hazards analyses for the Bristol Bay subarea, refer to the Easton Environmental Reports (Tasks 2, 3, and 5) and the Sheinberg Associates report, which is cited in Part Three of this Hazmat Section.

C. TRANSPORTATION

This subsection presents the results of the analysis of hazards associated with transportation of extremely hazardous substances in amounts exceeding threshold planning quantities in the planning subarea. Results are presented beginning with the hazards identification which includes the chemical and facility inventory. Detailed descriptions of the risk and vulnerability analyses for the Bristol Bay subarea may be found in the Easton Environmental Reports (Tasks 2, 3, and 5) and the Sheinberg Associates report, which is cited in Part Three of this Hazmat Section.

1. Hazards Identification: Three extremely hazardous substances (chlorine, ammonia, and sulfuric acid) are known to be transported within the planning district in amounts exceeding threshold planning quantities. Transportation modes and corridors, and transported substances are shown in Figure 1.

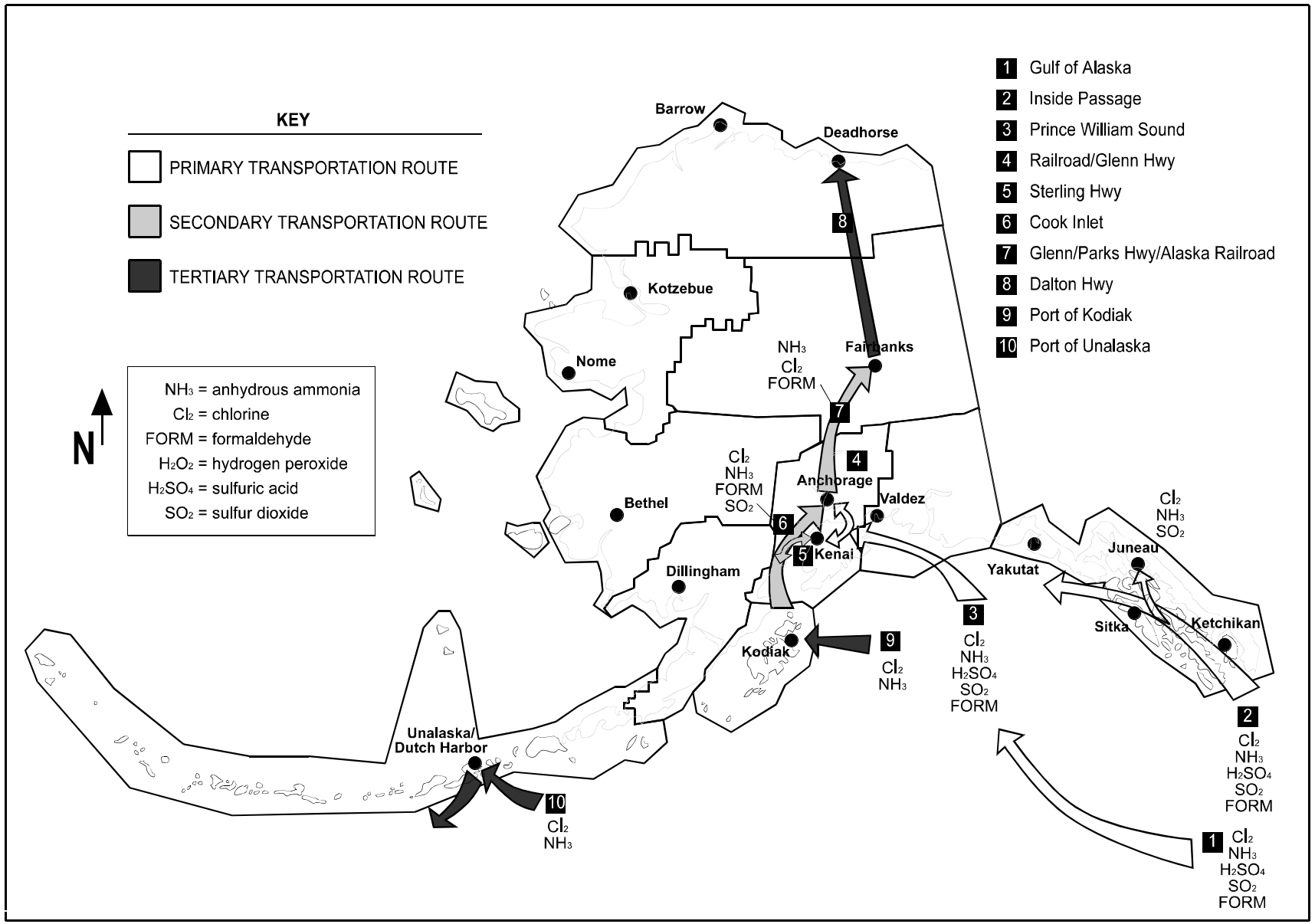
- CHEMICAL INVENTORY

Anhydrous ammonia, chlorine gas, and sulfuric acid solutions are transported through the subarea in amounts greater than threshold planning quantities. The properties and health effects of these three extremely hazardous substances were discussed previously.

- AIR AND WATER TRANSPORTATION

Extremely hazardous substances are normally delivered via air and water to the subarea, though no specific data are available. Given the very limited presence of extremely hazardous substances in the subarea, such shipments, if they occur, would be infrequent and the likelihood of a release small.

2. Risk and Vulnerability Assessments: For a complete summary of the hazards analyses for the Bristol Bay subarea refer to the Easton Environmental Reports (Tasks 2, 3, and 5) and the Sheinberg Associates report, which is cited in Part Three of this Hazmat Section.


KEY
PRIMARY TRANSPORTATION ROUTE
SECONDARY TRANSPORTATION ROUTE
TERTIARY TRANSPORTATION ROUTE
NH3 = anhydrous ammonia
Cl2 = chlorine
FORM = formaldehyde
H2O2 = hydrogen peroxide
H2SO4 = sulfuric acid
SO2 = sulfur dioxide
N
1 Gulf of Alaska
2 Inside Passage
3 Prince William Sound
4 Railroad/Glenn Hwy
5 Sterling Hwy
6 Cook Inlet
7 Glenn/Parks Hwy/Alaska Railroad
8 Dalton Hwy
9 Port of Kodiak
10 Port of Unalaska
Barrow
Deadhorse
Kotzebue
Nome
Fairbanks
Bethel
Anchorage
Valdez
Kenai
Dillingham
Kodiak
Yakutat
Juneau
Sitka
Ketchikan
Unalaska/
Dutch Harbor
8
NH3
Cl2
FORM
7
Cl2
NH3
FORM
SO2
6
4
5
9
Cl2
NH3
3
Cl2
NH3
H2SO4
SO2
FORM
Cl2
NH3
SO2
2
Cl2
NH3
H2SO4
SO2
FORM
10
Cl2
NH3
1
Cl2
NH3
H2SO4
SO2
FORM

D. PLANNING PRIORITIES:

While the results of the hazards analysis suggest that the relative risks associated with extremely hazardous substances are low, risks to worker populations may be significant. If the risk to workers is considered, priorities for emergency planning in the subarea might include the following:

- a release of ammonia or chlorine from the facilities for which some analysis was conducted,
- a release of other extremely hazardous substances.

For a complete summary of the hazards analyses for this subarea refer to the Easton Environmental Reports (Tasks 2, 3, and 5) and the Sheinberg Associates report cited in Part Three of this Hazmat Section.

E. REFERENCES

Alaska Regional Response Team, 1994. Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan) May 1994 (as amended).

Bristol Bay Local Emergency Planning District Steering Committee Hazard Analysis Work Book, Final Report, 1994. Prepared by Sheinberg Associates.

Easton Environmental, 1994. Hazards Analyses (Task 2). Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

Easton Environmental, 1994. Response Capability Assessments (Task 3). Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

Easton Environmental, 1994. State and Regional Hazard Profiles, (Task 5). Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

HartCrowser, 1999. 1998 Statewide Hazardous Material Inventory. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

1999. Alaska Level A and B Hazardous Material Response Resources. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

HartCrowser, 2000. Evaluation of Chemical Threats to the Alaska Public. Prepared for Alaska Department of Environmental Conservation, Division of Spill Prevention and Response.

HAZMAT: PART SIX - RADIOLOGICAL AND BIOLOGICAL ISSUES

Procedures for radiological response are included in **the Unified Plan, Annex J.**.

Biological response is not addressed and procedures are not under development for biological issues.

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